

## CLAIMS

We claim:

- 1           1.     A method for performing an input/output (I/O) operation in a computer  
2     between an I/O-initiating subsystem and a device through a memory, in which:  
3           the memory is arranged into portions that are separately addressable using first  
4     identifiers that are represented using a first number of bits;  
5           for the I/O operation, the device accesses a first space of the memory;  
6           the subsystem addresses I/O requests to a second space of  
7     the memory using second identifiers that are represented using a second number of  
8     bits;  
9           the method comprising the following steps:  
10    initially mapping the second identifiers to respective first identifiers that identify portions  
11    of the memory in the second memory space; and  
12    for any I/O request that meets a remapping criterion, remapping the corresponding  
13    second identifier to one of the first identifiers that identifies a portion of the memory in  
14    the first space of the memory;  
15           in which the second space is different from the first space and the second  
16    number of bits is greater than the first number of bits.
- 1           2.     A method as in claim 1, further comprising generating each first identifier  
2     to have a subset of bits identical to corresponding bits of the second identifier during  
3     remapping.
- 1           3.     A method as in claim 1, further comprising, for any I/O request that fails to  
2     meet the remapping criterion, creating a new copy of the data set in the buffer upon  
3     each instance of the I/O request.
- 1           4.     A method as in claim 1, further comprising, for each second identifier that  
2     is currently mapped into the first space of the memory and that meets a remapping  
3     condition, again mapping the second identifier into the second space of the memory.

1            5.     A method as in claim 4, further comprising the step of freeing for  
2   reallocation the portion of the memory in the first space to which the second identifier  
3   had previously been remapped.